

I hereby certify that the correspondence upon which
this notice is placed is being deposited with the US
Postal Service as first class mail in an envelope
addressed to the Commissioner of Patents Washington,
D.C. 20231 on the date set forth below.
MOONRAY KOJIMA, ATTORNEY

IN THE US PATENT OFFICE

EXAMINER

GROUP

SN

PRELIMINARY AMENDMENT

FILED - concurrently herewith

BY - Sato

SIRS:

Kindly amend the above application filed herewith as follows:
Claims 1-17, cancel without prejudice
Add claims 18-37, appearing in the appendix

REMARKS

Claims 18-37 are in the application replacing claims 1-17
which were cancelled to expedite prosecution. The new claims 18-
37 were drafted to be more in line with US practice.

Entry and examination and allowance are respectfully
solicited.

Respectfully

M. KOJIMA

MOONRAY KOJIMA

Box 627

Williamstown, Ma 01267

Tel (413)458-2880

14 August 01

FOR "6262660"

WHAT IS CLAIMED IS:

18. An imaging method of encoding a K space so as to fill said K space with orthogonal two directions as phase axes, said method comprising the steps of:

determining an encode order in consideration of distances from center of said K space to individual encode points and existing quadrants; and

encoding said K space in said determined encode order.

19. The method of claim 18, wherein said determining step comprises:

defining N1(> 4) encode points as a first segment in order of decreasing distances from center of said K space, next defining N2 encode points as a second segment in order of decreasing distances from center of said K space, and similarly performing segmentation subsequently;

assigning serial numbers to said encode points of a first quadrant in said first segment in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a second quadrant therein in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a third quadrant therein in order of decreasing distances from center of said K space, and next assigning serial numbers to said encode points of a fourth quadrant therein in order of decreasing distances from center of said K space; and next assigning serial numbers to said encode points of a first quadrant in said second segment in order of decreasing distances

from center of said K space, next assigning serial numbers to said encode points of a second quadrant therein in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a third quadrant therein in order of decreasing distances from center of said K space, and next assigning serial numbers to said encode points of fourth quadrant therein in order of decreasing distances from center of said K space, and similarly assigning serial numbers subsequently; and wherein

said encoding of said K space is done in order of said determined serial number to thereby collect data.

20. The method of claim 19, wherein order of said second, third, fourth and first quadrants, order of said third, fourth, first and second quadrants, or order of said fourth, first, second and third quadrants is used in place of said order of said first, second, third and fourth quadrants.

21. The method of claim 19, wherein order of said fourth, third, second and first quadrants, order of said third, second, first and fourth quadrants, order of said second, first, fourth, third quadrants, or order of said first, fourth, third and second quadrants is used in place of said order of said first, second, third and fourth quadrants.

22. The method of claim 19, wherein $N1 \geq 12$.

23. The method of claim 20, wherein $N1 \geq 12$.

24. The method of claim 21, wherein $N1 \geq 12$.

25. The method of claim 18, wherein an imaging region is scanned with an X direction as a read axis, and Y and Z directions

as phase axes; and wherein said K space is of a YZ-K space, and said center is of a YZ-K space; and wherein

said encoding is in said YZ-K space thereby to perform a 3D scan.

26. The method of claim 19, wherein an imaging region is scanned with a X direction as a read axis and Y and Z directions as phase axes; and wherein said K space is of a YZ-K space, and said center is of a YZ-K space; and wherein

said encoding is in said YZ-K space thereby to perform 3D scan.

27. An imaging system for encoding a K space so as to fill said K-space with orthogonal two directions as phase axes to thereby collect data, said system comprising:

means for setting an encode order in consideration of distances from center of said K space to individual encode points and existing quadrants; and

means for encoding said K sapce in said set encode order to thereby collect data.

28. The system of claim 27, wherein said means for setting comprises:

means for defining N1 (> 4) encode points as a first segment in order of decreasing distances from center of said K space, next defining N2 encode points as a second segment in order of decreasing distances from center of said K space and similarly performing segmentization subsequently; and

means for assigning serial number to said encode points of a first quadrant in said first segment in order of decreasing dis-

Patent 6,262,660

tances from center of said K space, next assigning serial numbers to said encode points of a second quadrant therein in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a third quadrant therein in order of decreasing distances from center of said K space, and next assigning serial numbers to said encode points of a fourth quadrant therein in order of decreasing distances from center of said K space; and next assigning serial numbers to said encode points of a first quadrant in said second segment in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a second quadrant therein in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a third quadrant therein in order of decreasing distances from center of said K space, and next assigning serial numbers to said encode points of a fourth quadrant therein in order of decreasing distances from center of said K space, and similarly assigning serial numbers subsequently.

29. The system of claim 27, wherein said space is YZ-K space, and said center is of said YZ-K space; and wherein

said means for setting comprises means for determining an encode order in consideration of distances from said center of said YZ-K space to individual encode points and existing quadrants; and

means for encoding in said YZ-K space in said set encode order to thereby perform a 3D scan.

30. The system of claim 28, wherein said space is a YZ-K space, and said center is center of said YZ-K space.

31. The system of claim 28, wherein said means for assigning serial numbers sets order of said second, third, fourth and first quadrants, order of said third, fourth, first and second quadrants, or order of said fourth, first, second and third quadrants in place of said order of said first, second, third and fourth quadrants.

32. The system of claim 30, wherein said means for assigning serial numbers sets order of said second, third, fourth and first quadrants, order of said third, fourth, first and second quadrants, or order of said fourth, first, second and third quadrants in place of said order of said first, second, third and fourth quadrants.

33. The system of claim 28, wherein said means for assigning serial numbers sets order of said fourth, third, second and first quadrants, order of said third, second, first and fourth quadrants, order of said second, first, fourth and third quadrants, or order of said first, fourth, third and second quadrants, in place of said order of said first, second, third, and fourth quadrants.

34. The system of claim 30, wherein said means for assigning serial numbers sets order of said fourth, third, second and first quadrants, order of said third, second, first and fourth quadrants, order of said second, first, fourth and third quadrants, or order of said first, fourth, third and second quadrants, in place of said order of said first, second, third, and fourth quadrants.

35. The system of claim 28, wherein $N1 \geq 12$.

36. The system of claim 30, wherein $N1 \geq 12$.

37. The system of claim 31, wherein $N1 \geq 12$.